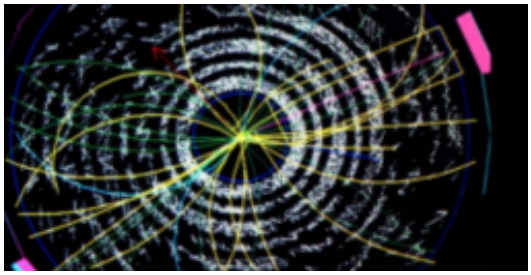

Contribution ID: **67** Type: **Oral Presentation**

Calorimetric Energy Scale in the NOvA Detectors

Tuesday, June 6, 2017 9:45 AM (15 minutes)

NOvA is a long-baseline neutrino oscillation experiment consisting of a near and far detector, both comprising layers of orthogonal scintillator-filled PVC extrusions. Reconstructing hits along the orthogonal views provides 3D tracks, and scintillation light provides calorimetry important for determining the visible hadronic energy of an interaction. Selecting muon tracks which stop inside the detector and choosing hits inside a sufficiently flat region around it's point of minimum ionization isolates a constant energy in the detectors. This energy is scaled by the path length of each hit, so additional quality cuts must be imposed to ensure accurate path lengths. Care must also be taken to avoid bias from electronic thresholds, which are meant to suppress noise hits but can also suppress low-energy muon hits far from the readout. After removing reconstruction and threshold biases, cosmic muon data provides a standard candle scintillation, while well-understood Monte Carlo simulation provides a standard candle energy, equipping NOvA analyses with a precise scale factor between observed light and desired energy measurements.

Primary author: Mr ALION, Tyler (University of Sussex)

Presenter: Mr ALION, Tyler (University of Sussex)

Session Classification: Long Baseline Neutrino Program